

THE CHIEF—President Lyndon B. Johnson speaks to several thousand MSC and contractor employees during his March 1 visit to MSC. With the President are NASA Administrator James Webb, center, and MSC Director Dr. Robert R. Gilruth. Standing behind them are members of MSC manage-

Apollo VI Launch Date Moved Up to March 28

I aunch date for the Apollo VI mission Monday was slipped three days from March 25 to

1st Apollo MQF **Arrives at MSC**

The first of four Mobile Quarantine Facilities (MQF) for returning Apollo lunar crews and support technicians last week was delivered to MSC. This first MQF is part of the recovery quarantine equipment supplied by Melpar, Inc., Falls Church, Va., subsidiary of Westinghouse Air Brake Company, under a \$227,347 contract.

The MQF arrived March 6 by truck from Airstream, Inc., Jackson Center, Ohio where the 35foot long MQF shells are fabri-

Built of heat-treated aluminum, the MQF has sleeping quarters, work spaces, food preparation and medical areas for flight crews and support technicians. Each MQF will be entirely self-sufficient and will be fitted with bunks, chairs, tables, lavatory, toilet, and kitchen facilities – everything needed for debriefing and preliminary postflight medical examinations during the brief transfer period from the recovery vessel to the MSC Lunar Receiving Laboratory.

When completed outfitted, each MQF will weigh approximately 10,000 pounds and will be pallet-mounted and fitted with hoisting slings for shipboard and flatbed trailer handling.

Also furnished under the Melpar contract will be tunnels through which crewmen will enter and exit the MQF and for dispatching to the Lunar Receiving Laboratory containers for onboard film and tapes, hardware and lunar sample return containers.

March 28 to allow additional time for prelaunch spacecraft testing. Apollo spacecraft 020 command and service modules are stacked atop the second Saturn V launch vehicle at Kennedy Space Center Launch Complex

The Apollo VI mission plan calls for a repeat of the November 9 first flight of Saturn V. except that the third stage S-IVB will burn into a highly-elliptical orbit with apogee beyond lunar distance. The command and service modules will peak out at an apogee of about 12,000 miles with command module recovery in the Pacific.

Apollo VI flight controllers Wednesday were scheduled to take part in an in-house network simulation (Sim-Net-Sim) in the Mission Control Center. A 10hour full-network simulation was scheduled for today, with another scheduled for Monday.

The Apollo VI Flight Readiness Review Monday was conducted by the NASA Office of Manned Space Flight at Kennedy Space Center.

At MSC, environmental testing of Apollo spacecraft in various regimes continues in the Space Environment Simulation Laboratory, the Vibration and Acoustic Test Facility and at the full-scale Impact Test Facility.

Apollo command module 105 Monday completed a plumbing/ wiring interconnect vibro-acoustic test series in support of the first manned Apollo mission. Two test profiles - 15 seconds at 147 decibels, and 12 seconds at 162 decibels - were run.

A simulated off-the-pad abort land impact test was run March 7 with Apollo command module 009. The test conditions were for a 32 fps descent rate and wind velocity of 35 mph.

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TO SEE FOR HIMSELF-

LBJ Speaks to Employees, **Announces Science Institute**

MSC to announce plans for a culation . . . Lunar Science Institute to be Training Facility before addressbetween Bldgs 13 and 16.

panied by NASA Administrator course in the next decade. James Webb in the flight from Washington, D.C. to Ellington AFB. Webb introduced the President to the crowd.

"I believe what Jim Webb and Dr. Gilruth tell me," said the President, "but every now and then I like to see for myself. That is one reason why I am here today.

"But I had another reason. And that was to tell you, on behalf of all of your countrymen who cannot be here themselves. how deeply we appreciate the great work you are carrying for-

"We have invested many billions of dollars during the past ten years in our efforts in space," continued the President. "But the true value to our nation of

President Lyndon B. Johnson this investment and all the work March 1 made a surprise visit to vou are doing here is beyond cal-

"We are close to a landing on established adjacent to the Cen- the moon. Our space programs ter. The President toured the for the decade of the Sixties are newly-completed Bldg 37 Lunar drawing to a close. Yet a mighty Receiving Laboratory, the Bldg intellectual and technological 29 Flight Acceleration Facility effort, such as you are engaged and the Bldg 5 Flight Crew in here, cannot just be turned on and off. We must stay the course. ing several thousand MSC and We must build new strength by contractor employees gathered using the strength we have. We must continue to cross new fron-The President was accom- tiers. This will certainly be our

> "As a further step toward joining hands with the world's scientific community," said the President, "I want to announce that we will build facilities here in Houston to help the world's scientists work together more effectively on the problems of space. We are going to have a new Lunar Science Institute alongside this great Center. It will be initially operated by the National Academy of Sciences and Rice University . . .

> "This great new Lunar Science Institute will provide new means of communication and research for the world's scientific community. It will help unite the nations for the great challenge of space."

In closing, the President said,



EXAMINES APOLLO SUIT—The President examines the latest in Apollo haberdashery during his tour of the MSC Lunar Receiving Laboratory. In the suit was suit technician John Mays. Behind them are NASA Administrator James Webb and MSC Astronaut Office chief Alan B. Shepard Jr. The President also toured the Flight Acceleration Facility where he watched second manned Apollo crewmen James McDivitt, David Scott and Russell Schweikart undergo a 9-G reentry profile on the centrifuge.

"We work to give all mankind its last great heritage. We are reaching for the stars. You are the pioneers and I want to congratulate you for what you are doing, and are about to do, in this great human adventure."

The Lunar Science Institute announced by President Johnson will be built under a \$580, 000 NASA grant to the National Academy of Sciences and will be operated by the Academy and Rice University. The Institute will ultimately become a part of a consortorium of universities from all parts of the country.

An old Clear Lake-area landmark, the "Silver-Dollar" Jim West mansion on Rice University property on the east boundary of MSC, will be the first facility of the Institute. Most of the Academy grant will be used to renovate and remodel the 17,000-sq ft building to meet Institute needs. Renovation is expected to be complete within a vear.

Since it is near the MSC Lunar Receiving Laboratory, the Institute will initially require little fixed or scientific equipment. The revamped mansion will have a library, offices, and rooms for scientific conferences and sym-

The Institute is expected to provide closer cooperation between university, industry and government scientists in the study of materials returned from the moon in manned Apollo lunar landing missions. In addition, it is expected to be useful to scientists all over the country who are interested in scientific experiments to be conducted on manned spaceflights.

Berry Awarded Day Medal In Philadelphia

MSC Director of Medical Research and Operations Dr. Charles A. Berry March 8 was awarded the Richard Hopper Day Memorial Medal in Philadelphia for "his pioneering work in the new vertical frontier of

Berry received the award at the annual members dinner meeting of the Academy of Natural Sciences of Philadelphia, which presents the Day Memorial Medal biannually to honor leaders of science for the exploration and discovery in the natural sciences.

The citation, accompanying the award, stated "the exploration of outer space has opened up a vertical frontier without parallel in its difficulties, dangers and challenges." The Academy of Natural Sciences is one nation's oldest research, museum and education centers.

MAN ON THE RUN-

ASPO Manager Low Featured In Syndicated Story

(The following profile of Apollo Spacecraft Program Office Manager George M. Low was syndicated by the World Book Science Service and later read into the Congressional Record by Rep. Olin E. Teague of Texas.)

By William Barry Furlong

It was 6:31:03 p.m. at Cape Kennedy when the test turned into disaster

Seconds later George M. Low got the message by phone: 'There's a fire in the spacecraft." Low was working late at his desk in the NASA Manned Spacecraft Center at Houston. He rushed to mission control center and took up the melancholy vigil. The date was Jan. 27, 1967—when the American space program, and the lives of thousands of persons connected with it were transformed.

Three astronauts lost their lives, a decade of steady progress seemed jeopardized, and the three-man Apollo spacecraft on which the nation's lunar exploration depended had flunked a vital test without once leaving Earth. George Low drew the toughest assignment in the space

to salvage America's commit- the MSC command building into ment for a manned landing on the moon by 1970.

Today he's well on his way. Successful launching of the Saturn 5, the world's largest rocket, put the bounce back into NASA's step. North American, the builder of the Apollo spacecraft, is moving toward delivering the first model for a manned flight in mid-1968. President Kennedy's mandate to land on the moon by 1970 is far from sure of accomplishment, but the job is not impossible.

Low is a veteran of the space program. He was there the day the civilian space agency was created. In the nine years before the spacecraft fire he had been one of the key administrative men in NASA and rose to the job of deputy director of the Manned Spacecraft Center, the Houston complex where the astronauts train and their missions are planned.

In a sense, the Apollo disaster brought him a step down the ladder; Low moved out of the program: Fix the Apollo, and try ninth floor executive suite atop

the suitcase-and-airliner life of a troubleshooter. But few men in America carried the responsibility or wielded the resources of Low in his new job as manager of the Apollo Spacecraft Project.

He had a massive budget - at least \$1 billion the first year. He had a massive work force— 400 on his personal staff, 3,500 NASA men and women working on the spacecraft project in Houston, at least 100,000 more persons employed by the contractors building the Apollo spacecraft and its components. Yet the challenge and change was in getting his hands dirty once again as a do-it-yourself engineer.

"I`m a dirty-hands engineer," said Low. He is a low-keyed man who speaks with only the faintest hint of his native Vienna.

Low's task of rebuilding the Apollo has turned out to be as complex as a knitted shoelace, as arcane as space itself. For weeks and months after the fire experts sifted through the charred remains of the space-

Among their many disturbing discoveries: A head for a ratchet wrench lying next to burnt-out wiring; it might have contributed to a short-circuit. (An Apollo contractor was warned to clean up the sloppy workmanship of its employes.)

They studied the character and quality of the tens of thousands of devices, made of 2500 different materials, in the spacecraft. Each of the materials was tested to see if it was combustible, not only in the normal atmosphere but in the vastly different 100% oxygen atmosphere of the spacecraft-in-operation. Anything flammable in that special atmosphere that astronauts - i.e., plastic food containers, spare material for on-board calculations—is now stored in fireproof containers. The aluminum plumbing that carried pure oxygen through the cabin was replaced with stainless steel tubing. Eventually, to test all these changes, as unmanned lyzed before the first launching the bureaucracy of space. of a manned Apollo-Saturn 5 rocket.

spacecraft, but also in his own career.

"I went from 'general' management to 'project' management, which is the opposite way deputy director of the Manned Spacecraft Center, he was responsible for "looking at a large number of things—the various emphasis those budgets refuture, the total resources available for the various projects.' the Apollo Spacecraft Project – as the man specifically delegated became responsible "for bringing a single, specific job to com- just to get going."

"I think that's when he decided he could do as well making his own breakfast in the morning," says Mary-R. Before George goes to the office he runs at least a mile every morning.

His involvement with the Apollo spacecraft and its details is only one more step in a lifetime that has been played out in the long shadow of history. George Low was not quite in his teens when Adolf Hitler and the Nazis took over his homeland. Austria. Shortly thereafter, he and his family came to the United States. They settled in upper New York State; his mother still has a farm there. But he knew his hope and his destiny was not on the farm. "It never occurred to me that I wanted to be anything but an

He went to Rensselaer Polytechnic Institute in Troy, N.Y. -though his schooling was interrupted by a hitch in the Army - and ultimately got his master's degree in aeronautical engineering there. He went to work for NACA - the precursor of NASA-in Cleveland. The research projects he embarked on there ultimately were to carry him to the top levels of manned space flight.

He can remember the night the Russians had launched their first Sputnik on Oct. 4, 1957: he was on his way to the family's summer cottage at Attwood Lake, O., and was passing through a small town when he heard the news on the radio. "It seemed obvious to me that we were beginning a new era," he says. Within weeks, he was asked to go to Washington = temporarily-to help set up the first manned spaceflight program, Project Mercury, He never returned to Cleveland.

Somewhere in the pursuit of knowledge, Low thinks and hopes the young men of the future will remember to supplement their theoretical knowledge with a practical do-it-vourself dirty-hands involvement

engineer," he says.

KEEPING FIT - ASPO Manager George M. Low keeps trim by running a mile every morning and having a can of diet liquid for lunch. (Photo by Del Borer from World **Book Science Service)**

pletion." To be sure, the scope of the program demanded a massive administrative talent, but "it had the effect of bringing up more in the way of engineering.

The change had no apparent might be carried on board by the physical or mental effect on George Low. Now 41, he is still slim and straight. For lunch, he has only Sego at his desk. He matches the basic specifications of a top-line space executive and communicates a feeling of being solid, dependable, not yet eroded by memories of other days. He has an unexcelled theoretical spacecraft would be deliberately competence in supersonic flight. set afire and painstakingly ana- He has unrivaled experience in

In the weeks and months after he took over the Apollo space-To Low, the significant craft program, Low devoted 12 changes were not simply in the to 16 hours a day, six days a week, to his job. "I try to make it a rule not to work on Sundays," he says. "I keep Sunday for going to church and playing with the kids." He has five chilpeople usually go," he says. As dren, ranging in age from 4 years old to 15 and they adore the elaborate manner he does everything for them on Sunday, from water skiing to serving up panprograms, their budgets and the cakes for breakfast. "He makes spectacular pancakes," says his flected, the manpower, the wife, Mary-R. (a long-standing contraction for Mary-Ruth).

On weekdays, Low rises very But when he became manager of early and cooks his own breakfast. "He's ready to go at 5 or 5:30 in the morning," says Maryto rescue a bad situation—he R, with awe if not admiration, "while I need two cups of coffee

with details. For George Low stands witness to the fact: A man can rise as high in the U.S. space program as his mind - and his hands—can lift him.

Lederer Speaks

At AIAA Meet

NASA Manned Space Flight Safety Director Jerome Lederer March 11 spoke on "Changing Concepts of Aerospace Safety' before the Houston Section of the American Institute of Aero-

nautics and Astronautics.

Though Lederer is responsible for OMSF safety activities, his talk covered plane crash survival, pilot error, risk control and system safety engineering.

Goddard Essay Contest Deadline November 1

announced the opening of the Robert H. Goddard Historical Essay Award Competition for annual nationwide competition is open to any US citizen.

The contest is named in honor of rocket pioneer Dr. Robert H. Goddard, whose scientific and technological contributions helped open the door to space, although recognition of his work was late in coming in the US.

Essays may treat with any significant aspects of the historical development of rocketry and astronautics and will be judged on their originality and scholarship. The essays may bring new information to light or may east a new and different upon events or individuals influencing rocketry and astronautics in the United States.

Goddard Historical Essay Con- Reference section.

The National Space Club has test, c/o National Space Club, 1140 Connecticut Avenue NW. Washington D.C. 20036.

The winner, who will be an-1968. Offering a \$500 prize, the nounced at the Dr. Robert H. Goddard Memorial Dinner in March 1969, will receive the Goddard Historical Essay Trophy, certificate and \$500

The National Space Club Committee for the History of Rocketry and Astronautics, whose members serve as judges for the contest, are: NASA Historian Dr. Eugene M. Emme, chairman; Frederick C. Durant III, assistant director of the Smithsonian Institution National Air and Space Museum; Dr. John Patton, NASA Headquarters: Prof. Melvin Kranzberg of Case-Western Reserve; Marvin W. McFarland, chief of the Library of Congress Science and Technology Division, and Dr. Entries should be submitted Charles S. Sheldon II of the by November 1, 1968 to the Library of Congress Legislative

RULES OF THE CONTEST

Essays should not exceed 5,000 words and should be fully documented.

• Essays will be judged on originality and scholarship by the Committee for the History of Rocketry and Astronautics of the National Space Club, and their decision will be final.

- · Essays should be received by the Chairman, Committee for the History of Rocketry and Astronautics, by November 1, 1968; the winner, if one is selected, will be announced at the Dr. Robert H. Goddard Memorial Dinner in March 1969.
- Entries may be submitted by any US citizen, and evidence of citizenship should be included with essays submitted.
- The name of the competitor shall not appear on the essay, and each essay must have a motto selected by the author in addition to the title. This motto shall appear in three places: a) on the title page of the essay, b) on the outside of a sealed envelope containing identification of the author, and c) above the name and address of the competitor inside the envelope containing this identification. The envelope identifying author will not be opened until the Committee has made the winning selection.
- Essays and identifying envelopes must be postmarked before November 1, 1968, and mailed in a large sealed envelope marked "Goddard Historical Essay
- · Essays must be typewritten, legible, double-spaced, on paper approximately 81/2 by 11, and must be submitted in duplicate, each copy complete in itself. • Essays remain the property of the authors, although the National Space Club retains the right to publish and distribute winning essays.

Prize: Trophy of the Dr. Robert H. Goddard Historical Essay Award, a \$500 Honorarium, and National Space Club Certificate.

HE'S A LUTHIER-

Space-Gear Designer Johnson **Builds Guitars in Spare Time**



LUTHIER'S FIRST EFFORT — Harold Johnson of FCSD is a guitar builder, or luthier, in his spare time. Here he strums on his first product — a mahogany flamenco guitar which he estimates took some 60 to 100 hours to build. He has a second guitar about half finished.

At work, Harold Johnson of Flight Crew Support Division constructed mainly of mahogany spends his time dreaming up way-out contraptions for crew training and for extravehicular space propulsion—he invented and patented the Hand-Held Maneuvering Unit used by Ed-

At home, Johnson wears a different hat - that of a luthier. A luthier is one who builds stringed musical instruments such as violins, mandolins and guitars. Johnson builds the latter.

With one flamenco-type guitar complete, he has a second guitar half finished. He estimates that it took him some 60 to 100 hours of spare time over a period of four months to build his first guitar.

Johnson modestly admits playing the guitar "a little bit" and names as his idols the Spanish Gypsy flamenco guitarists Serano and Sabicas. He also admires the playing of classical guitarist Andres Segovia.

His first effort as a luthier is with a white-pine face. The mahogany for the sides and back was planed down to a thickness of one-sixteenth inch. The sides had to be soaked and then heated to allow them to follow ward H. White II during Gemini the hourglass contour of the guitar mold.

> "Once I got the hang of it," said Johnson, "I had the side panels formed and in the mold to dry in about 15 minutes."

> He uses several types of glue which were not available in times past when luthiers such as Stradivari and Guarneri were building their now-priceless violins. Epoxy is used in some locations for bonding structural guitar parts together, while ordinary Elmer's white glue is used in other spots. The back is attached with traditional animal-

> "I want to be able to take the back loose in case I need to do any repairs inside the guitar's body," Johnson explained.

"That's why I've used animalhide glue for the back."

He attributes the quality of the sound produced by a guitar to the arrangement of stringers or fan bracing on the inside of the face panel. "This fan bracing and proper edge tapering of the face allows the entire face panel to act as a single diaphragm to produce the sound I like," said Johnson.

"A lot depends on wood selection, too," he continued. "You could work forever on a piece of wood that didn't have a good natural tone and never get a good sound out of it. The oldtimers like Stradivari seemed to have a natural ability to pick a piece of wood by thumping on it to determine its natural tone."

He introduced what he believes is an original innovation in the structure of his first guitar. Where most guitars have a steel rod through the neck, Johnson milled out a cove in the neck under the fretboard into which he epoxy-bonded an aluminum channel about one inch wide. The channel runs full length of the neck from the foot to the head where the tuning machine is installed.

High-grade marine spar varnish was used in the finish of his first guitar. He estimates that he spent about \$20 for such items as the fretboard, bridge and the tuning machines.

Johnson's second guitar abuilding will be made of korina -a Philippine wood with a grain and character comparable to Spanish cypress. He says that rosewood is the optimum material for building the classicaltype guitar, while Spanish cypress is probably the best for the flamenco guitar. The ideal wood for the face is a species of spruce that grows in the mountains of Central Europe. The spruce's slow growth causes a tight uniform grain structure. Rosewood, Spanish cypress and European spruce are difficult to obtain and have to be imported.

"Materials used and workmanship mean everything in getting the kind of sound you want from a guitar," said Johnson. 'You can't cut corners and skimp on materials if you want a top-quality instrument.

Johnson says that he'll probably concentrate on building flamenco-type guitars, and he hopes to begin selling them after he develops more skill. He got his instruction on guitar building from books bought from musical instrument specialty house in New York.

He has played the guitar since he was ten, and has had some formal training on the instrument. "One problem a guitar player has is keeping his fingernails long enough to pick the strings. I suspect that all this sandpapering while building these guitars has kept mine ground down too far," he said.

When not at work at his luthier's bench, Johnson likes to hunt, fish or chase a golfball around 18 holes.

Win Cash for Suggestions



Jean R. Stone \$480 — procedure for buying photo-mailers



Bailey R. Chaney \$25 - white gloves for traffic guards



\$25 — reduce labor document needs



Joel W. Moor \$25 - modify stops on double doors



Ann L. Hardeman \$25 — expedite emergency \$25 — spray etcher employee calls



James C. Clarke safety device



Curtis C. Collins \$20 -- improve overtime \$20 -- notification of record keeping



Jack D. Stanley performance ratings



John B. Williamson \$15—centralize MPAD microfilm reader



Split \$50 for revising



Doris S. Kreske, John E. Jones Jr. Raymond A. Donatto, E. L. Shropshire Split \$25 for tubing sleeve contract checklist form on 4-inch power roller



Joseph P. Siegfried

Orrin A. Wobig

Inocencio M. Cortez Jr.

\$25 each for publication of NASA Tech Brief on reinforced pipe joints



Marty Melanson Tom Maccarrone MSC Program Control and Contracts-Downey





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Goliad was a battlefield in the struggle for Texas long before time ran out

on Fannin and his martyred men

O^N THE San Antonio River, less than 50 miles above Copano Bay on the Texas coast, lies historic Goliad.

Just between the town and the river glows the restored magnificence of an old Spanish mission, Santo de Zuniga. And Presidio La Bahia, a fort built two centuries ago, frowns down from its rocky height across the river.

These three - Goliad, the Spain in Texas

Long before Goliad was to make its mark in the struggle for Texas freedom, the mission and the fort figured strongly in Spain's effort to colonize the American Southwest. While the friars of Espiritu Santo went and civilizing the Indians, La Bahia's function was to prevent Indian uprisings and protect the region from possible encroachment by the French and English.

Though Goliad was not founded by Mexican decree until 1829, events that led to that founding began back in 1749. In that year, Captain Orobio y Basterra, of the Army of New

Spain, searched with a small body of troops for a better place to locate Presidio La Bahia. The fort and its attendant mission then lay at Mission Valley, near modern Victoria.

Both the presidio and the mission had first been established in 1722 on the site of La Salle's Fort St. Louis (possibly on Garcitas Creek) on the Texas coast. Incessant trouble with Indians, however, made it advis-Nuestra Senora del Espiritu able to move farther inland in 1726 to a location on the Guadalupe River, known as Mission Valley. After 23 years at Mission Valley, Governor Jose de Escandon had ordered a better mission, and the fort-from a location to give greater protectrinity famous in Texas history. tion of Spanish interests in

Obedient to Escandon's orders, Basterra and his troops set out from Mission Valley in 1749, moving cautiously across the wild plain, ever alert for marauding Indians. Coming at last to the San Antonio River, the little about their work of converting party crossed in canoes and clambered atop a rugged hill on the opposite bank. Basterra, perched on the rock-ribbed summit, appraised the location with military eye. Here was what he sought: tactical advantage against assault combined with a nearby supply of water. He lost no time surveying the place and staking out a huge quadrangle.

La Bahia had a new home.

Gibraltar of the Southwest

What Gibraltar is to the Mediterranean, La Bahia was to under his successor, soldiers Spanish rule in Southwest Texas. From its founding, the fort was a rock around which ebbed and flowed the fierce tides of war. It seemed destined to become a place of violence, a magnet to attract political plots and counterplots. Long before it played its part in the Texas Revolution, La Bahia was a veteran of assaults and skirmishes, its walls breached and scarred by scores of battles that had swirled around them. And always, La Bahia

Most of the early fort's leaders had dispositions to match the ruggedness of the rock they commanded. There was the slavedriving martinet, Francisco Tovar, who insulted and abused even the priests at nearby Mission Espiritu Santo. There was the crafty Carzola, who lured into the walls and killed an Indian chief. The chief, named El Mocho (The Maimed) for an ear lost in battle, had been stirring up rebellion among his people. Only one commander, Capt. Manuel Ramirez de la Piszina. who had succeeded Basterra, was remembered with real affection among his people.

Under such leadership, discipline sagged and morale suffered. Captain Juan Cortes reported in 1795 that he had eight cannon.

but not a soldier in the garrison knew how to fire them. When, tore down a portion of the wall, men found guilty of gambling were ordered to work out their fines by rebuilding the wall. It was not until the end of the 18th century that La Bahia reached full strength behind strong fortifications.

Gutierrez and Magee

Those walls were soon to be tested by their first full onslaught. Revolt against Spain had been brewing for some time, and in 1812 an expedition of some 300 adventurers under Gutierrez and Magee was formed to overthrow Spain and make Texas a free nation. Marching to La Bahia, the expedition took over the fort and prepared to defend it against certain reprisal from Spanish forces at Bexar.

Attack was not long in coming. Salcedo and Herrera,* with some 2,000 Spanish troops, marched from Bexar and placed La Bahia under siege. Without water, and dispirited by the death of Magee three months after the siege began, the filibuster army asked to talk terms.

A parley was arranged between Gutierrez and the Spanish commanders. Terms of surrender proved unsuitable to the besieged leader. He rejoined his men inside the fort, took the offensive, and routed the King's lowed, Gutierrez captured the subordinate officers murder them soon after. This act caused many Americans to desert the expedition. Gutierrez himself was court-martialed and relieved of command.

Later, a revengeful force under Arredondo caught up with and wiped out the remaining insurgents. Remnants of the defeated army escaped and made their way back to La Bahia, only to be shot there by former comrades-in-arms who had remained behind and had, with change of heart, declared themselves for Spain.

Manuel Maria de Salcedo, Governor of Texas, and Simon de Herrera, Governor of Nuevo Leon.

Perry and Long

One soldier who escaped the battles of the ill-fated Gutierrez-Magee Expedition returned another day to fight at La Bahia at the head of his own troops. In 1817, Henry Perry had joined forces with Aury and Mina to fight in Mexico against Spain. Perry organized a body of soldiers, withdrew from action in Mexico, and marched to La Bahia. His assault against the fort was about to succeed when Spanish reinforcements arrived. Finding himself surrounded and his case hopeless, Perry shot himself with his own weapon rather than be taken prisoner.

Another soldier of fortune -James Long - had visions of taking La Bahia by storm. In the fall of 1821, he and his troops numbering some 50 to 60 men set sail from Galveston and landed at the mouth of the Guadalupe River. They marched to La Bahia, surprised the small garrison, and took possession of the fort.

Long's stay was short. Spanish troops were dispatched immediately from Bexar, and Long met them under a flag of truce midway between the mission and the fort.

Truce talks came to naught, and Long returned to La Bahia to prepare for a siege. It was a short one. Within 24 hours, Long had surrendered with all his men. troops. In the pursuit that fol- He was taken to Laredo and thence to Mexico City, where Spaniards and had one of his he was released-only to be "accidentally" killed by a

Origin of Goliad

In 1821, Mexico won its independence from Spain. For a time, garrisoned by soldiers of the new Mexican Republic, La Bahia was to know a kind of peace that had been denied it for many years.

After a few years, those living in the pueblo (town) around La Bahia thought it well to change the name of their place. The local ayuntamiento (governing body) met and, through Rafael Monchola, petitioned the State of Coahuila and Texas as follows:



Mission Espiritu Santo de Zuniga, Goliad

"In view of the great confusion and the misunderstandings that have arisen . . . because of the meaningless name of the Presidio of La Bahia del Espiritu Santo which is not at all appropriate, I beg that this august Congress declare the place a Town with the name Goliad, which is an anagram made from the surname (Hidalgo) of the heroic giant of our revolution . . .

In reply, the Congress of Coahuila and Texas on February 4, 1829, decreed that "The fortress of La Bahia . . . may be called the town of Goliad . . .?

Work of the Mission

While the blood of soldiers and adventurers reddened the rocks of La Bahia, just across the river, at the mission, Franciscan friars worked ploddingly in the ways of peace.

When Mission Espiritu Santo was moved with Presidio La Bahia from Mission Valley to the San Antonio River, two of the more docile Indian tribes moved with it. Members of the Jaranames and Tamiques had been rather easy to civilize, taking their religious instruction and agricultural duties more or less seriously. But they came to the Goliad area with some fear and misgiving, for the move put them closer to their dreaded enemies, the fierce and warlike Karankawas.

Mission Espiritu Santo prospered, and became in time the owner of the largest cattle ranch in Spanish Texas, with its herds numbering high in the thousands. The main trouble was persuading even the peaceful Indians to remain at the mission when there was work to be done. During "working" seasons, when the prickly pear and pecans ripened, the Jaranames and Tamiques had a habit of fading into the brush. Discipline and religious instruction they accepted without a murmur, but work was a different matter.

Success and prosperity at Espiritu Santo led to a decision to establish another mission, Nuestra Senora del Rosario, nearby. The plan was to use this mission to convert and civilize the Karankawas, an ambitious and courageous undertak-

Surprisingly enough, Rosario Mission prospered for a time, building up its own herds to some 30,000 cattle. But the Karankawa spirit was not easily adapted to peace. Such learning as the friars were able to impart to a few Indian leaders only backfired, as the Karankawas turned new-found knowledge to their own uses in the ways of war and treachery.

Troubles with Renegades

There was, for example, the infamous Jose Maria. He learned quickly, acquired a fluent command of Spanish, and became the pride of the mission fathers. Appointed an overseer, he commanded great respect among his people. But Maria found it hard to forget the bloody ways of his

One day in 1778, Louis Landrin arrived by schooner from Louisiana to explore the Texas coast. Boarding the schooner with a band of Indians under the

guise of friendship, Jose Maria was hospitably received with food and drink. Suddenly, at a signal, the Indians whipped out weapons and murdered Landrin with his entire crew. Later, when Spanish soldiers put Maria to death, his execution touched off a series of crime waves among the Indians, and wholesale desertions of the Spanish missions on the San Antonio.

After Maria's trouble-making came uprisings incited by Manuel Alegre, another Indian of Rosario Mission. Soldiers from La Bahia had to be called in to quell the Alegre troubles. A Karankawa chief, Frezada Pinta (Painted Blanket), always influenced his people to oppose the Spanish, but was subtler than his fellow renegades. He always managed to bring about a peaceful air among his people on those occasions when gifts were distributed at the mission.

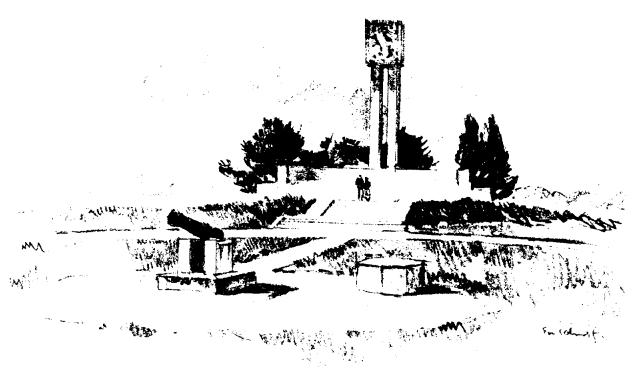
When the Karankawas were not busy doing mischief at Rosario and Espiritu Santo Missions, they were fighting among themselves or locked in battle with their avowed enemies, the Comanches, Apaches, and Lipans. Guns were not hard to come by, with French and English traders eagerly supplying the demand for both sides, and the La Bahia garrison was often powerless to deal with the intertribal warfare.

Decline of the Missions

Eternal fighting and bickering worked against the missions. Many converts deserted to join their savage brothers, despairing of a philosophy that taught peace instead of war. Thousands of head of livestock were stolen, butchered, or driven off by the Indians. To make matters worse, the Spanish Crown now stood against the missions. Declaring them unnecessary, the Crown issued an edict that all unbranded cattle of the missions forthwith became the property of the King. As for financial help from Spain, not even the padre's annual pittance was paid. Texas missions were about to fall on evil days.

The beginning of the end came in 1794 when Spain decreed the secularization of all the Texas missions. This meant that the mission lands reverted to the government, and the missionaries were discharged. Rosario was abandoned in 1807, with its lands being distributed among Spanish settlers.

Mexican Republic after 1821, tional Convention.



Fannin's Grave, Goliad

but fell into decay and finally was abandoned by the Indians. It was officially closed in 1830, when an inventory was made and the mission placed under the care of Geronimo Huizar, an official of La Bahia.

Remember Goliad

In the minds of most Texans, Goliad and La Bahia are best remembered for the part they played in the revolution against Mexico

Late in 1835, Presidio La Bahia had fallen to the forces of Collingsworth and Ben Milam, the latter soon to be killed in his attack against San Antonio. After the fort was taken, it was placed in command of Philip Dimmit, whose company was composed largely of Irish fighters from Refugio and San Patricio.

Dimmit and his men, eager for Texas Independence, decided to make their own declarationwith or without authority. Marching to the parade grounds within La Bahia's famous quadrangle on December 20, they raised a flag of independence – a banner bearing a red and bloody arm brandishing a sword.

This hasty and unauthorized action caused displeasure among the Texas General Consultation, which had met at San Felipe, and served blunt notice to Mexico that Texans were getting ready to make their bid for freedom. It was not until several months later, on March 2, 1836, Washington-on-the-Brazos, that the official Declaration of Mission Espiritu Santo con- Independence was drawn up and tinued to be used under the signed by the Texas Constitu-

Events moved swiftly in Texas after the Declaration was signed. Just four days later, on March 6. the Alamo fell. Col. James W. Fannin and his troops at La Bahia (which Fannin called "Fort Defiance") were the only

Texans left behind stone walls.

Hearing that settlers near Refugio were on the line of march of an attacking army, Fannin sent Captain Amon B. King with 28 men to bring them in. When King was placed under attack, Fannin sent Colonel William V. Ward and 120 men to rescue King. Neither rescue party survived.

Meanwhile, Sam Houston had ordered Fannin to blow up La Bahia and retreat to Victoria. Fannin demurred. When he did retreat, it was too late. He was caught with his force of about 350 men on an open plain near Coleto Creek, between Goliad and Victoria. Outnumbered and his case hopeless, Fannin surrendered, after a bitter battle, on March 20, 1836.

Exactly one week later, on Palm Sunday, Fannin's men were marched out a short distance from La Bahia's walls and shot. Their leader was accorded the honor of dying alone before a firing squad.

by E. M. Schiwetz

It was the last time blood would be drawn at La Bahia. With the death of Fannin and his men, the fort's long history of violence was ended. Less than a month afterward, Santa Anna was defeated at San Jacinto and Texas was free.

Goliad Today

The productive peace that surrounds Goliad today belies the violence that engulfed the area in earlier days. It seems difficult to believe that the place could have resounded for so many years to the cannon's roar and the battle's shout.

Mission Espiritu Santo, which fell into decay during the 19th Century, has been restored to full grace and beauty. And across the river, the remains of La Bahia rise in majesty and power atop their rockbound crag-peaceful now but still proud of the glory of command.

As a king of poetic justice, the only part of La Bahia in use today is the chapel, dedicated two centuries ago to Nuestra Senora de Loreto. Kept up through the years, the chapel now serves the surrounding community as a church.

Near the scattered ruins of the quadrangle walls, a stately monument marks the spot where Fannin sleeps with his martyred men.

The history of Texas from its earliest exploration through its colonization and growth into a republic, and finally as a state of the Union, is an extremely interesting history. Through the courtesy of Humble Oil and Refining Company, articles from Humble's Texas Sketchbook will appear in the Roundup during the next several months. The articles were written by F. T. Fields. Pencil sketches and watercolors accompanying the articles are by the noted Texas artist E. M "Buck" Schiwetz, Many of the places described in the series are within weekend driving distance of MSC.



Goliad Today



CAMPAIGN SUPPORTER-MSC Pilot Alfred Worden gives his National Health Agencies and International Service Agencies campaign contribution to Astronaut Office campaign chairman Joy Morris, At left is MSC NHA-ISA Project Officer Silvie Gaventa. Although the campaign closes today, contributions will not be turned away. At the end of the drive's first week the following MSC organizations had reached 100 percent participation: Program Control and Contracts Directorate, Legal Office, Flight Safety Office, Information Systems Division, Management Services Division, Personnel Division, LM Project Engineering Division-ASPO, Advanced Systems Office, Reliability and Quality Assurance Office, Policy and Standard Office, and Fabrication and Shipping and Receiving Branch.

Superior Performers

Gerald E. Anderson Pamela M. Andreasen Receive Sustained Superior Performance Awards at RASPO-Downey

Langley Chief Named New Webb Assistant

years, has been given new duties as Special Assistant to NASA Administrator James E. Webb.

Thompson will bring his long service and experience in science and technology to bear on the NASA program and management matters.

In addition, Webb said Thompson will head a NASA Headquarters Interim Working Group to evaluate future manned flight projects.

Since the new duties will take Thompson away from Langley for prolonged periods, Charles J. Donlan, Langley Deputy Director, will serve as Acting Director.

In 1926 Thompson joined the National Advisory Committee ciate Director.

Dr. Floyd L. Thompson, Di- for Aeronautics (NASA prerector of Langley Research decessor) at the Langley Center. Center, Hampton, Va., for eight He won successive promotions, becoming Director in 1960.

Thompson previously served as Chairman of the NASA Policy Planning Board, and chairman of the Apollo 204 Review Board appointed to investigate the fatal accident at Cape Kennedy January 27, 1967.

Donlan has served at Langley since 1938, becoming Deputy Director last year.

In 1958 Donlan became a pioneer member of the NASA



Auto Club Issues Tips For Women Drivers

The American Automobile Association has issued some helpful hints for women drivers who must drive alone. The AAA advisory said that "attacks on women drivers are crimes of chance and can be prevented. Criminals take advantage of time, place and opportunity to attack women motorists.'

The following measures are recommended by the AAA as the best means to avoid creating circumstances for such attacks:

- Keep the tank full, the car in tip-top shape, stay on well-lighted roads, avoid bad neighborhoods, even if it means going out of the way.
- Lock all doors and keep the windows closed at all times. Keep your purse, jewelry and packages out of sight. The flash of a diamond could be the trigger to trouble.
- Keep your car in gear at intersections. If anyone tries to open the door, police say to 'take off' even if it means disregarding a traffic signal.
- You're most vulnerable when locking and unlocking the car, so park in attended commercial lots or welllighted streets. If someone is loitering about, walk past

your car till you can get trusted help. Look in the car before opening it.

- Tell someone your route, destination and time of arrival. If you have a flat, you can drive slowly on the tire for 15 miles. If you break down, sit still. You are safest in a locked, closed-up car. Eventually, someone will come for you.
- Wait for police and don't hesitate to wave strangers by. Tell them, through the closed window, that your husband's gone for help or police are on the way.
- Should a car block your path, blare your horn repeatedly for help, but stay in the locked car. If you are followed, drive to the nearest police or fire station, or well-staffed gas station. Don't go home, even if it's close by.
- Consider taking a dog along, preferably one trained to protect you. Take a cab.
- Forget about being kind to others, about being late to the party, or being overcautious. Think of yourself first and apologize later.
- If all else fails, don't panic. Scream your head off!

The Roundup is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Director	Dr. Robert R. Gilruth
Public Affairs Officer	Paul Haney
Editor	Terry White
Staff Photographer	A. "Pat" Patnesky



Space Task Group established GRISSOM PLAQUE—The Virginia Moose Association presents to MSC and to the Virgil I. Grissom Library in at Langley that year to conduct Newport News, Va. plaques in memory of Grissom, a member of the Warwick Virginia Moose Lodge. Left to right Project Mercury. He served as are Charles Brice, Moose state director, Mrs. Charles Shreves, librarian of the Grissom Library, Charles Donlan, Associate Director of Project NASA Langley Research Center acting director, who accepted the plaque on behalf of MSC, and Congressman Mercury until 1961 when he Thomas N. Downing of Newport News. Donlan until 1961 was associate director of Project Mercury in MSC's returned to the staff of the Lang- predecessor at Langley, the Space Task Group, where he was involved in selection of the original seven Mercury ley Research Center as Asso- pilots, including Grissom. Donlan is acting Langley Center director in the absence of Dr. Floyd L. Thompson, on assignment as special assistant to NASA Administrator James. E. Webb. (See story at left.)

Roundup Swap-Shop

received after the deadline will be run in the next following issue. Send ads in writing to Roundup Editor, AP3. Ads will not be repeated unless requested. Use name and home

FOR SALE/RENT-REAL ESTATE

3-2-2 brick in Bayou Chantilly, Dickinson, large family room w/cathedral ceiling and fireplace, formal living room, large master bedroom, laundry, electric kitchen, landscaped, large lot, patio w/gas grill, fenced, carpets and drapes, garden house. Available immediately. Low twenties, 150/mo. Atwater, 534-5684 for appointment.

Rent by day or week, 1 bedroom furnished beach house at Bolivar, with boat slip in front. Evelyn Huvar, HU 3-7626 (no home phone).

House for rent, 4-31/2-2. In Nassau Bay. Wooded lot overlooking Lake Nassau. Available for 1 year beginning 15 March. \$280/ mo. plus utilities. Karl G. Henize, 591-2889.

Friendswood Equity: 4-2-2, low payments/ prestige area, all built-ins, cent. air heat, fenced yard. John C. Tuffy, HU 2-1326.

Well-located one-acre tracts in Friendswood, residential. Good investment, Lee Linson, HU 2-7388.

By owner, 3 bedrooms, 11/2 baths, 2 car garage, large paneled den w/cathedral ceiling, built-ins, large landscaped fenced yard, near schools and new Foley's shopping center. Assume for equity 51/4% FHA loan, \$120 per month. Mike Collins, 944-5558 after 5.

Immediate Occupancy 3-2-2 brick Early American home, beautifully landscape in Dickinson. Near freeway for easy access to MSC (15 minutes). Large family room w/ cathedral ceiling and fireplace, formal living room, large master bedroom, laun- ry, electric kitchen, pantry, large lot, pc io w/gas grill, fenced, carpets and drapes. garden house. Lot 113 ft. by 82 ft. Harold Atwater HU 8-3662

3 hedrooms, 11/2 bath, double garage, utility room, large yard, nice neighborhood. \$130 a month Dickinson 534:4228

3-2-2 brick, El Lago. Old English, wooded, fenced lot. Central air/heat, completely draped, carpeted, paneled den, living room, dining room, all walk-in closets. Shown by appointment only, R. H. Sutton, 877-2947.

Rent by week or month all-electric 1-bedroom furnished beach house in Bolivar, boat slip and channel in front, 45 min. to MSC. Bud Powell, HU 3-4141 (no home phone).

4-2-2 in Deer Park, Large living and family room 23 ft. by 20 ft, U-shaped kitchen and large utility room, 1970 sq. ft. less garage, carpet throughout. \$300 down and \$179 per month on balance of mortgage. Dick Look, GR 9-3122.

Nassau Bay - Spanish 4-3-2 very unusual, many extras. 2600 ft. on huge treed lot, \$39,500. Shrum, 591-4543.

Gulfgate, by owner, assume 51/4% FHA, low equity, very clean, 3 bedrooms, wall-towall carpet, 2 air units, central heat, trees and nice yard. D. D. Bland, MI 3-0173, shown by appointment.

7-bedroom home on Galveston bay. 3 acres, grounds maintained by resident attendant. 15 minutes to MSC. \$350/month. lim McGee, GR 1-1184

3-2-2 brick house, large family room, built-in kitchen, central A/H, complete carpeting, gas grill & light, fenced yard in Glenbrook Valley area. Don Incerto, MI 3-

Large 3-bedroom home, in Shoreacres. Assume loan and equity of 23,500. Terms available. A. L. Davis, GR 1-4076.

Five acres of land off Manvelle Highway MI 5-0188

3-2-2 brick in League City across from Clear Creek high school. Electric kitchen with new dishwasher. Available immediately for lease or sale. Al Brady, 877-4801.

FOR SALE-AUTOS

62 Chev. Biscayne, Excellent condition. 6 cyl., 4 dr., radio, heater, air conditioning. Paul Stokholm, Webster, 932-3753.

29 Model A Ford 2-dr. sedan, mechanically sound, body in near excellent condition, runs good. Larry Arnim, HU 8-2757 to

64 VW sedan, black w/red interior, sun roof, whitewalls, radio, tinted front window, clean, 28,600 miles. \$975. Harold Atwater,

63 Ford 300, 2 dr. sedan, V8, standard transmission, air conditioning, tinted windshield, radio, heater, all vinyl seats, clean, good tires, \$600. Robert C. White, HU 2-

61 Impala Chevy convertible. Needs repairs. \$400. Evelyn Huvar, HU 3-7626 (no home phone).

62 VW, clean, good tires, runs good, B. J. McGee, HU 8-3188.

67 Firebird 326, air, power steering, 2speed w/console, white wall tires, 9,000 actual miles. \$2695. Diana Brazil, Baytown, 422-5936.

Mustang, 65, white with factory air, radio, automatic transmission, white side walls. One owner and clear, \$1,375, M. C. Owens, ext. 5431 (no home phone).

64 Valva PV544, excellent condition, Jack C. Eidson, HU 8-4409.

59 Triumph station wagon, marginal condition, cheap transportation, \$200 or will haggle. Tom Havig, 877-2817.

61 Pontiac Catalina convertible with Ventura interior. Top and body good condition. Has 389 engine, auto trans, pwr. steering, R/H. W. J. Crea, 932-3209 after 5:30.

60 Chev. Belair sport coupe, V8 automatic transmission, radio, heater, good tires good condition, smooth running. \$550. David Reed Jr., ID 3-2817.

64 Pontiac Catalina, 2 dr., power and air, automatic transmission, \$995. Gene A. Reed, PA 9-3908.

56 Chevrolet, air conditioned, recently overhauled engine, good 2nd car. Al Bean, HU 8-0191.

62 T-Bird extra clean, runs good, pwr air, new tires, battery and front suspension. \$900. Jim Rutland, 591-3133 Ext. 2166; home 877-3114.

60 Volkswagen Microbus, new motor, good tires and body, excellent camper or work car. \$600. Jim McGee, GR 1-1184.

59 Chevy, V8, standard, 15,000 miles on rebuilt engine, new paint, looks and runs good, dual exhaust, \$395. Bernie Oczkow-

67 Jaguar XKE Roadster, 3000 miles 4.2 Liter British racing, green, plush green interior, full syncro trans., all tinted glass, a real car. \$4095. Bernie Oczkowski, 926-

66 Jaguar XKE Roadster, 9000 miles 4.2 Liter, white, plush black leather interior, AM/FM radio, full syncro. \$3595. Bernie Oczkowski, 926-7898.

65 Ford Galaxie 500 convertible, dark green, white top, 390 cu. in. V-8, a/c and all power, window, seats. Tinted glass, AM/FM radio, auto/cruise control, 30,000 miles, exInt cond., best offer over \$1,450. John Dornbach, 877-4198 after 5.

63 Impala 2 door hardtop 327 automatic, power steering, factory air, transmission just overhauled, motor excellent condition. \$895. Don Carter, GR 2-4456.

62 VW sedan, 15,000 miles since complet overhaul, \$650. John Estes, 645-0447.

62 Volkswagen, sedan, good condition, good tires, 55,000 miles. \$550. Cline Frasier,

64 Jaguar XKE Roadster, white with black top and interior, fresh paint, two new tires, AM/FM radio, wire wheels, 3 years old, extra clean, will sell for 4-year bluebook retail. John H. Boynton, 946-1363 or 944-9319 and leave phone number.

62 Triumph TR-4 real clean, individual \$1050. Charlotte Clark, GI 2-7385.

62 Cadillac-2-tone, 4-door, hardtop, loaded, perfect-\$1500 or trade for good 4-wheel drive vehicle. Roy A. Alford, 932-

FOR SALE-MISCELLANEOUS

Free: pups. Mother is champion Heinz 57. Father is either a poodle, beagle or one of two gentlemen of unknown backgrounds. D. Doherty, HU 8-0182.

Stud service: white, mini-toy poodle, \$50, registered. A. F. Smith, HU 8-3238.

Piano, mahogany upright in excellent mechanical condition, \$115. Marj Alford, 932-2857

AM-FM car radio, underdash mounting \$30. Glenn McDuffie, HU 8-2776.

10 ft. Squall Sailboat, excellent condition, fiberglas hull, dacron sail, aluminum mast. Hand trailer, price new \$499.95; our price \$250. W. W. Petynia, 877-4605.

Dachshund puppies. Will be six weeks old April 5. \$25. Paul J. Weitz, 591-3071.

Sofa, opens into bed, brown and gold. recently redone, good condition, \$40. A. F. Smith. HU 8-3238.

At study Diamond Cuatro, 293876, Collier, WE 5-5843, La Marque, after 5.

Good grade gelding, excellent trail horse and drill horse, has won ribbons and trophies in reining, barrels and other games. \$275. Collier, WE 5-5843 after 5.

Registered half-Arabian stallion. Will sell as gelding if preferred. 2 years old, chestnut, 2 hind stockings, blaze, light mane and tail. Very classy. Must see to appreciate. Collier, WE 5-5843, La Marque after 5.

Rotary lawnmower, 20 inch. B. J. McGee, HU 8-3188 evenings.

"Bogen Challenger P.A. System, two 12 in. Jensen speakers, 35 watts. Like new. \$125. Mary Dunn, GR 9-1295.

Poodle puppies: small miniature, 8 wks old, first shots, 1 male, 1 female, show stock quality, champion background, sire: apricot, dam: silver biege, AKC registered. Dewing, 534-3051 Dickinson.

Bolex Super 8 camera with carrying case, little used-still in warranty, \$159.50. Bolex Super 8 sound or silent projector with extra speaker and carrying case, little used-still in warranty, \$259.50. Both units practically new, must sell immediately. Roy N. Field,

Double bed -- box springs, mattress, brass headboard and frame. Perfect condition. \$50. D. Brizzolara, Nassau Bay 591-2509,

Early American high chair \$5, Peterson high chair \$7.50; 1962 Silvertone TV \$20; Walnut Hi-Fi speakers \$25; Heathkit Hi-Fi amplifier (25 watt) \$20; Bogen Hi-Fi amplifier \$20: small barbeaue arill \$1: folding camp potty \$2; wall-hung gun rack (4 guns) \$4; 55-cup coffee pot \$8.50. W. Scott. 932-

19 inc. B&W TV, Zenith, with roll-groundstand, \$20. R. H. Dietz 534-3665; Dickinson. First Flight golf clubs, four woods, 9 irons, putter, bat and cart, \$95. S. N. Hardee, MI 3-6274.

Apartment size gas stove and ice box. Good condition. \$20 for each. 534-4228.

5 yr. old quarter mare, registered, black, with saddle, \$300. 80-amp crackerbox welder, \$30. Acetylene cutting and welding rig-assortment of tips plus dolly to transport cylinders, \$70. L. Patterson, GR 3-6500.

Movie projector, Sekonic Z605 for both Super 8 and single 8 film, brand new, never used. Main features are the SS-RESONAR zoom lens f/1.4 15-25 mm, automatic threading, builtin automatic pilot light, infinitely variable speed control from 12 to 20 frames per second, forward still and reverse projection, and voltage conversion adjustment for use at nine voltage stages between 100 and 250 VDC. B. Rosebaum, GR 3-6901

21 ft. South Coast sail boat, all fiberglas with teak trim, 2 bunks with mattresses. Marine head, dacron working sails with dacron sheets and halyards, stainless steel hardware. \$2500. W. Platt, 944-2939 or J. Temple 667-8871.

21 in. Motorola B&W console TV. Contains Hi-Fi speaker system. Excellent reception. \$55. R. Sutton, 877-2947.

14 ft. sailboat, carrying rack, mahogany deck, fiberglassed hull, aluminum mast and spars, nylon sail, \$295 or trade for folddown camping trailer. Boyd Mounce, GR 3-5183.

14 ft. Sailfish, excellent condition, new sail. no trailer. \$200. Joe Rutherford, HU 7-

67 250cc Suzuki, excellent condition, wil consider 12ga. Browning or small outboard motor in excellent condition in trade. E. Mc-Elwee, GR 4-3476.

1962 Starcraft Premier, 17 ft. fiberglas, folding seats, 85 hp Mercury (has alternator), trailer, convertible top, two 12-gal. fuel tanks, water ski equipment, extras, excellent condition, \$1250, M. Broussard, 643-1611,

Omega 4X5 enlarger w/variable condensers, \$150. Development tanks, 4X5 film hangers, several trays, \$30. Bud Powell, ext. 4141, (no home phone).

Sylvania, 23 in console TV, in excellent working condition, with two speakers. \$35. D. Brizzolara, Nassau Bay 591-2509 after 5.

Small miniature apricot Poodle puppies, male and female, AKC registered. Rod Bass, 932-4763, League City.

Learn to fly with the Aero Club Inc. for MSC and contractors. Cessna 150 \$7/hr wet: C-172 \$9/hr and K-Bonanza \$16/hr. Instructor \$5/hr. Only \$50 down \$11/month 50% refundable. Howard Kyle, HU 2-7789.

Portable Panasonic TV, 11 in screen, just like new, Purchased in October 1967, and hardly used. Black & white. Irene Short, 946-3572 after 5

One-third interest in 1947 Aeronca Champ. Starting to recover. \$300. Paul Blackmon, HU 2-7381.

15 ft. Boat, windshield, canopy, remote steering, 35 hp Evinrude elec., big wheel trailer, boat has fresh paint but needs varnish work, motor in excellent condition. Priced for quick sale-\$295. G. Ricks, 877-1739. Ebb Tide Apts., Seabrook.

Kingsize box springs and mattress set. U. S. Royal latex Koylon Garland series. 2 yrs. old, 15 yr. guarantee. \$100. J. Cun- The average suggestion award ningham, HU 8-1390.

Zenith 15 in TV, good condition, built-in stand, \$35. Joe Rutherford, HU 7-1671.

set with stand, in excellent condition, only one year old \$85. Marilyn Garzon, MI 3-

Estate gas range, good condition, \$40. Gibson window air condition, 1963 model, but has had relatively little use, \$85. John Lottinville, HU 8-3128.

Uher - 4000S tape recorder, battery operated, West German, J. D. Bledsoe, HU 3-5358 (no home phone).

Golf clubs, bag, three woods, five irons, excellent starter set, \$35. J. D. Bledsoe, HU 3-5358 (no home phone).

14 ft. fiberglas runabout, 35 hp electricstart Johnson motor and big-wheel trailer, good condition. Best offer over \$400 or consider trade for equity in Volkswagen. Mike Lonsberry, 16461 El Camino Real #3, 488-0627 after 5.

18 ft. boat, 40 hp Evinrude Selectric motor, big-wheel tilt trailer, completely equipped, \$700. Ted Guillory, 472-8208.

16,500 BTU Sears window air conditioner less than 1 year old, still in warranty, \$150. Ted Guillory, 472-8208.

Accordian (Mother-of-Pearl), \$50. Carmen V. E. Brown, 944-3970.

\$16 ft. fiberglas boat, big two-wheel tilt trailer, 100 horsepower Mercury motor, canopy. MI 5-0188.

4000-BTU Emerson, "Quiet-Kool," window air conditioner. Excellent condition (only used 2 months) \$75. G. E. cooler. Good condition, \$15. J. W. Samouce, HU 8-0406. 5-piece bedroom set, good condition, \$95. J. D. Roberts, GR 9-3929.

Walnut-finish formica 5-piece dinette set. \$45. HU 2-7140.

Pickup camper - std. 8 ft., dinette, water and butane systems, storage area, jacks. Sleeps 2. \$550. J. B. Haines, 5133 Clay, Houston, WA 6-4333.

21-ft. ChrisCraft and 4 wheel trailer \$800. Williams, 5779 Bellfort, MI 3-7337

Maple double-bed with mattress and springs, \$50. Philo hi-fi, in working condition, \$25, R. Bake, GR 1-2814.

Sailboat - El Toro Class, 8 foot Dinahy with dacron sail. Excellent condition. \$150. T. M. Macfarlane, HU 8-2493.

1960 16-foot Glaspar Citation, six individual seats, 75-hp Evinrude, tilt trailer, top and stern cover, extras, excellent condition, \$1250. N. Corbett, Ext. 5961 (no home

Portable heater, thermostat, instant heat \$6.50. Solid Oak bookcase headboard, footboard and frame for single bed, \$25. Youth bed, rails and mattress, \$25. Richard Stanton, 932-2982.

Danish walnut oval dining room table complete with three leaves, six chairs, plus buffet with removable glass top. Excellent condition, 877-3153.

Gold wrought-iron table with champagne alass top and four matching chairs with apple-green leather cushions. Original price \$200. Used 2 mo. Sell \$150. Evelyn Huvar, HU 3-7626 (no home phone).

Fireplace screen with draw drapes, log holder, tools with one extra large log prong holder, all match, and grate. \$50. Evelyn Huvar, HU 3-7626 (no home phone).

Stud Service, male silver blue AKC registered miniature poodle, Evelyn Huvar, HU 3-

35 mm camera, Leica 3F with F/1.5, 50 mm Summarit lens. Excellent condition, \$90. Ed Kenyon, 534-2354.

WANTED

Wanted to buy: sailboat, gas clothes dryer, Hi-Fi outfit and a desk. 946-7193. Oscilloscope w/CRT, any condition, at

give away price. J. W. Samouce, HU 8-0406. Chest of drawers suitable for nursery. HU 2-7140.

Would like a ride from 8600 Gulf Freeway to Building 13, 8:30 to 5. LeAnne Bible, 944-0835.

If you are a budding newcomer to the field of numismatics or a seasoned trooper, and are interested in forming an MSC coin club, stand up and be counted. Call Gerald Janicke, Ext. 6128. Your participation is solicited.

Electric Hawaiian guitar, single neck, 6 or 8 string. Age and condition not important. Jim Bates, 944-4687.

NASA Suggestors Earn \$4 Million

More than \$4 million in cash suggestion awards were earned by NASA employees druing FY 1967, according to an agencywide incentive program report. was \$42.

Measurable benefits from Used Zenith black and white portable TV adopted suggestions for FY 1967 were \$156 million, \$33 million more than the previous year. About three-fourths of the suggestions adopted had no tangible benefits, but did foster improvements in service, safety, quality, technology and mission accomplishment.

At MSC, 773 suggestions were submitted during FY 1967 with 152 being adopted. Agency wide, 3,906 suggestions were submitted with 866 being adopt-

During the same period, MSC employees earned 62 Quality Salary Increases and 183 Sustained Superior Performance awards. The NASA totals were 798 QSIs and 1046 SSPs.

Goddard's Konradi Seminar Speaker

Dr. Andrei Konradi of NASA Goddard Space Flight Center March 8 was the featured speaker at the MSC-University of Houston Space Physics Seminar. His topic was "Observations of Low-Energy Solar Protons in the Magnetosphere Following the Flare of July 7, 1966."

Haptonstall Finishes Toastmasters Course

J. D. Haptonstall of Procurement and Contracts Division recently became the first employee to complete the training course offered by the MSC Chapter of Toastmasters. The Toastmasters organizations help people improve their ability in public

Aero Club Starts Ground Schools

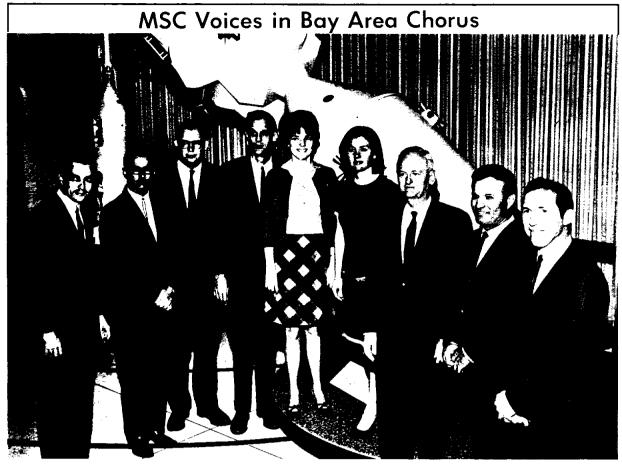
The Aero Club Monday will begin an Instrument Pilot Ground School at 5:15 pm in Room 716 Bldg 2. The course will cost \$10. A Private Pilot Ground School begins Wednesday at 5:30 pm at the same location. Tuition will be \$15 for the private course using the Sanderson system.

To register for either class, attend the first session or call Tripoli at 591-3300 Ext 3320 for the instrument school or Charles Krpec at MI 5-6089 for the private pilot school.

The MSC Employee Activities Association has partially subsidized the Aero Club's training and safety activities to provide low-cost instruction.

The Aero Club has a Cessna 150, a Cessna 172 and a K-Bonanza. Operated as a non-profit corporation for MSC and contractor employees, the Aero Club emphasizes instruction and flying safety.

Club meetings are held the first Monday of each month at 5 pm in Room 716 Bldg 2. Non-members are invited to attend.



TUNE CARRIERS — Singing in the March 31 Bay Area Chorus Astronaut Memorial Concert performance of the Mozart Requiem will be the above MSC employees. Left to right are Gerry de Vezin, tenor; Clarke Hackler, tenor; Jim Bone, tenor; Herbert Tiedemann, bass; Vicki Jones, alto; Beverly Duncan, soprano; Warren Gillespie, tenor: Eddie Bernard, bass, and Earl Gilbert, bass. Not in photo: John D. Orr. The concert, with members of the Houston Symphony accompanying the Chorus, will be at 8 pm in the MSC Auditorium. Mozart had partially completed the Requiem Mass in D Minor on a commission from a patron when he died in 1791 at the age of 36. One of his pupils completed the work for its first performance in Vienna.

Echo I Calls it Quits After 7 Years in Orbit

Echo is coming home.

lite, Echo I, is coming down siderably firmer and more enter a year-long course to earn from its nearly circular orbit gleaming. 800 miles above the Earth. It will reach the ground soon, possibly before summer.

The 100-foot globe of aluminum-coated mylar plastic, more than seven and one-half years old, has been battered by space dust and meteoroids so that its skin is wrinkled like a prune. It has lost much of the benzoic acid and anthraquinone inflating gas that held it firm and

For the past year Echo has been descending from the position where it was probably seen by more people than any other man-made object in space.

Calio Addresses AAS Chapter March 26 Meet

The Houston Chapter of the American Astronautical Society March 26 will present a talk by MSC Deputy Science and Applications Director Anthony J. Calio. His topic will be "Science and Applications at MSC.

The meeting will be at the Nassau Bay Motor Hotel and will begin with a hosted cocktail hour at 6 pm, buffet dinner (\$3.50/person) at 7, and the program at 8.

Non-members, MSC and contractor employees are invited. For reservations, call Teresa Sullivan at Ext 5131.

Echo I has been superseded The world's first passive re- by a passive reflector satellite flector communications satel- 35 feet larger in diameter, con-

> NASA launched Echo II January 25, 1964, and carried further experiments in long distance reflection of telephone conversation, photographs and music which Echo I proved possible. And a series of active communications satellites with electronic receivers and transmitters on board - AT&T's Telstar, NASA's Relay, Syncom and Applications Technology Satellites (ATS), and COMSAT's Intelsats — have improved on Echo's simple signal bounce experiments to produce reliable telephone, teletype and television service around the world.

Echo I captured the world's imagination. Launched August San Antonio, Texas; John A. 12, 1960, Echo I was the debutante of the year - bigger, brighter and more billiant than almost any star in the firmament.

Echo I was easily visible to the unaided eye over most of the Earth. Echo fan clubs sprang up in schools. Newspapers and radio stations reported daily predictions where it would pass, and when. Boy and Girl Scout troops waited for her . . . as did many thousands of others in big and little communities.

In slightly more than seven and a half years since launch, Echo I has flown around the Earth more than 35,600 times. in excess of one billion miles.

Scientist-Pilots End Academics, Start Jet School

Ten scientist-pilots completed the first phase of their training February 29 and prepared to jet pilot wings.

The ten, selected last August, have completed the academic portion of the general training program. It consisted of courses in science and technology, and familiarization with spacecraft and spaceflight operations.

Two scientist-pilots have been assigned to each of five Air Force bases where they will receive 53 weeks of flight training as members of regular student pilot classes.

Reporting March 21 are: Brian T. O'Leary, 28, and Robert A. R. Parker, 31, Williams AFB, Chandler, Arizona; and Joseph P. Allen, 30, and Karl G. Henize, 41, Vance AFB, Enid, Okla-

Reporting April 4 are: Philip K. Chapman, 32, and William E. Thornton, 38, Randolph AFB, Llewellyn, 34, and F. Story Musgrave, 32, Reese AFB, Lubbock, Texas; and Anthony W. England, 25, and William B. Lenoir, 28, Laughlin AFB, Del Rio, Texas.

An eleventh scientist-pilot selected last August, Donald L. Holmquest, 28, is completing an internship at Methodist Hospital, Houston.

Each of the ten will log 240 hours of flying during the course. The first 30 hours will be in the T-41A, a propeller-driven light plane. The next 90 hours will be flown in the T-37 jet trainer, and the last 120 hours will be in the supersonic T-38 jet trainer, the same aircraft they will fly after returning to MSC.

Arctic Aurora Scanned By Ames Center's Jet

sweep the sky for pictures of pletely. Arctic Aurora.

gyro-controlled mounting, the snatch every opportunity to reprecision camera takes in virtually the entire Arctic night sky 1968 Aurora Expedition is exat a glance. Its field of view ex- pected to unravel further the tends almost from horizon to mysteries of the Northern Lights horizon, through a 160-degree and to increase understanding of

Center's 990 Convair jet trans- and his Earth environment. port has been adding to the collection of aurora photographs at dition occurred between January the rate of more than 1,500 dur- 18 and February 8. The second ing each night flight. By using session began February 20 and precision cameras and other instruments at 30,000 feet, above most of the Earth's atmosphere, and higher, the aircraft and her scientist crew are adding to the files of auroral data at an tions. unprecedented rate.

Pictures snapped automatically by the Fairchild Automax 35-mm cameras are normally given 4-second exposures at a stop opening of f/1.5, using ultrafast film. These full-sky photographs will form the basis for an extensive study of the various forms assumed by aurora displays.

Much of the 1968 NASA Auroral Expedition's camera work is being directed by Dr. Syun-Ichi Akasofu and his research team from the Geophysical Institute of the University of Alaska. The group normally based at College, Alaska, near Fairbanks, is among the world's leading authorities on auroral phenom-

In addition to the airborne photographic studies, the expedition, based at Churchill Research Range, in Manitoba, Canada, is coordinating its observations with those taken by NASA's OGO-IV, Orbiting Geophysical Observatory satellite, whose sensors view the Earth from altitudes above 250 miles.

Equipment aboard OGO-IV includes three experiments of special interest to aurora scien-

Dr. R. A. Hoffman of NASA's Goddard Space Flight Center. Greenbelt, Md. is studying low energy auroral particles. Professor J. Blamont of the University of Paris and Dr. Edith I. Reed of Goddard are making photometric observations of various auroral emissions. Dr. Charles A. Barth of the University of Colorado at Boulder is examining the ultra-violet spectra of the Earth's upper atmosphere. Dr. Barth also has one of the experiments in the NASA plane.

Expedition equipment aboard the jet includes riometers, photometers, spectro-photometers, interferometers and time-lapse cameras.

For the first time, auroral scientists have been able to correlate their airborne observations with a space satellite and with data being taken at ground stations in "real time." Scientists use these simultaneous observations to record elusive aurora

A big "eye" mounted atop the displays from widely separated cabin of a NASA jet airplane is vantage points in an effort to being maneuvered nightly to understand them more com-

Auroras form and break up Held in its carefully stabilized unpredictably, so experimenters cord even small bits of data. The Earth-Sun relationships which The NASA Ames Research have a profound effect on man

The first 13 flights of the expewas expected to end March 11. Several flights over the polar cap and latitude surveys of the Earth's airglow have been made in addition to the aurora observa-

The expedition is managed and directed by Louis C. Haughney of the Ames Center. Ames is conducting the project with the cooperation of the National Research Council of Canada which provided the Churchill Range on Hudson Bay as the operating base.

> The Credit Union needs YOU as a member

Bridge Club Starts 2nd Beginner Class

The MSC Duplicate Bridge Club is offering a second beginner bridge class starting April 1 at 7:30 pm. The class is aimed toward anyone not familiar with the modern point count system of contract bridge and will cover all the main points of basic rubber bridge – definitions, scoring, hand evaluation, bidding, and some bridge hand strategy.

A \$10 class registration fee is payable in advance and enrollment will be limited. For information call Jim Raney at Ext 4015 or at 488-0324.

Bridge Club standings in recent competition are as follows: February 13 master point 81/2 table Mitchell movement -North-South: B. Durbin and B. DeGeorge, 1st; J. Raney and R. Morris, 2nd. East-West: Don and Alice Larson, 1st, and W Lokken and M. Lee, 2nd.

February 20 fractional 8-table Mitchell movement - North-South: B. Leighton and D. Young, 1st; Son and Alice Larson, 2nd. East-West: J. Lee and W. Bryan, 1st; J. Oldfield and A. Bragg, 2nd.

February 27 master point game - North-South: Don and and B. Leighton, 2nd, East-West: J. Herrmann and R. Clemence, 1st; B. Parshall and C. Brown,

March 5 fractional game, 5½table Howell movement-J. Snyder and M. Powell, 1st; B. Boone and J. Greene, B. Bryan and J. Shortt, and D. Boydston and P. King, tied for 2nd.